

ABSTRACT

A method of enhancing detection for a specific object in a body. A nanoparticulate is administered to the body for location in an area to be explored for detection of the object, if present. The nanoparticulate is at least partially metallic, has a formed non-spherical shape having a minimal characteristic dimension in the range from about 1 to about 3000 nanometers, and has a formed composition capable of producing thermal pressure either in the nanoparticulate or in the object greater than the object could produce in the absence of the nanoparticulate. Electromagnetic radiation is directed into the body. The electromagnetic radiation has a specific wavelength or spectrum of wavelengths in the range from 300nm to 300mm selected so that the wavelength or wavelength spectrum is longer by a factor of at least 3 than the minimum characteristic dimension of the nanoparticulate. The nanoparticulate absorbs the electromagnetic radiation more than would one or more non-aggregated spherically shaped particles of the same total volume with a composition identical to the nanoparticulate. The nanoparticulate produces an enhanced optoacoustic signal resulting from the absorption that is received and converted into an electronic signal and presented for assessment of the at least one parameter by a human or a machine